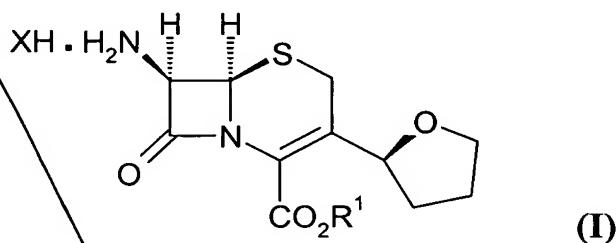


CLAIMS:

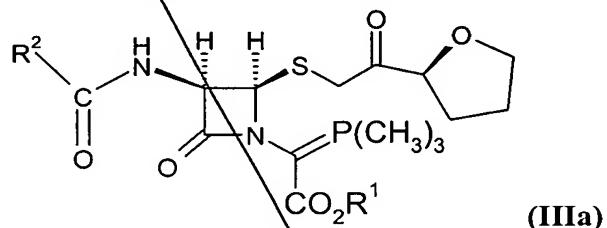
1. A process for preparing a compound of formula (I):



wherein R^1 is *para*-nitrobenzyl or allyl; and X is halo;

5 comprising the steps of:

a) cyclizing a trimethylphosphinic compound of formula (IIIa)



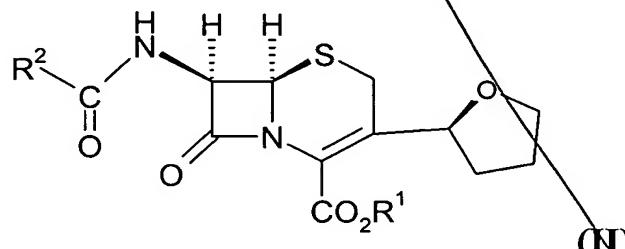
wherein

R^1 is *para*-nitrobenzyl or allyl;

10 R^2 is selected from the group consisting of C_{1-6} alkyl, C_{6-10} aryl, C_{6-10} aryl C_{1-6} alkyl and dithianyl;

in a solvent;

to form a compound of formula (II)



15 wherein

R^1 is *para*-nitrobenzyl or allyl;

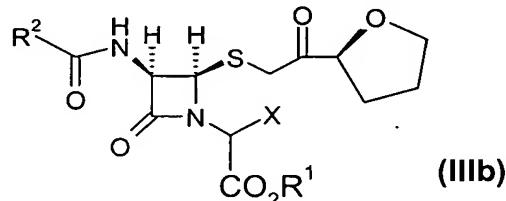
R^2 is selected from the group consisting of C_{1-6} alkyl, C_{6-10} aryl, C_{6-10} aryl C_{1-6} alkyl and dithianyl; and

b) reacting said compound of formula (II) with an acid.

20 2. A process according to claim 1, wherein said solvent is selected from the group consisting of toluene, xylene, tetrahydrofuran, methylene chloride and acetonitrile.

3. A process according to claim 1, wherein said acid is phosphorus pentachloride or phosphorus pentabromide; and wherein X is chloro or bromo.

4. A process according to claim 1, further comprising the step of preparing said compound of formula (IIIa), by reacting a compound of formula (IIIb)



5

wherein said R¹ is *para*-nitrobenzyl or allyl,

said R² is selected from the group consisting of C₁₋₆alkyl, C₆₋₁₀aryl, C₆₋₁₀arylC₁₋₆alkyl and dithianyl; and

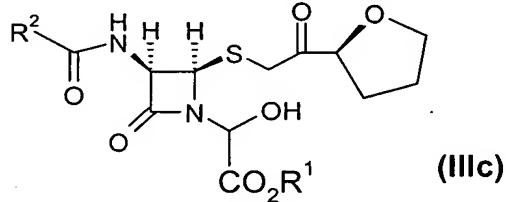
said X is halo;

10 with trimethylphosphine, in a solvent and in the presence of a base.

5. A process according to claim 4, wherein said solvent is tetrahydrofuran, acetonitrile or methylene chloride.

6. A process according to claim 4, wherein said base is selected from the group consisting of imidazole, 2,6-lutidine, pyridine, N-methylmorpholine and sodium bicarbonate.

15 7. A process according to claim 4, further comprising the step of preparing said compound of formula (IIIb), by reacting a compound of formula (IIIc)

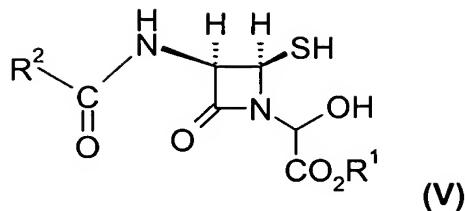


wherein said R¹ is *para*-nitrobenzyl or allyl and said R² is selected from the group consisting of C₁₋₆alkyl, C₆₋₁₀aryl, C₆₋₁₀arylC₁₋₆alkyl and dithianyl; with a halogenating agent, in a solvent and in the presence of a base.

8. A process according to claim 7, wherein said halogenating agent is thionyl chloride, thionyl bromide, phosphorus trichloride or phosphorus tribromide; and said halo is chloro or bromo.

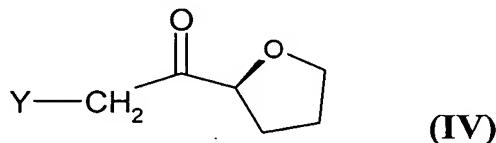
9. A process according to claim 7, wherein said base is selected from the group consisting of pyridine, 2,6-lutidine, N-methylmorpholine and imidazole.

10. A process according to claim 7, further comprising the step of preparing said compound of formula (IIIc), by reacting a compound of formula (V)



wherein said R^1 is *para*-nitrobenzyl or allyl and said R^2 is selected from the group consisting of C_{1-6} alkyl, C_{6-10} aryl, C_{6-10} aryl C_{1-6} alkyl and dithianyl;

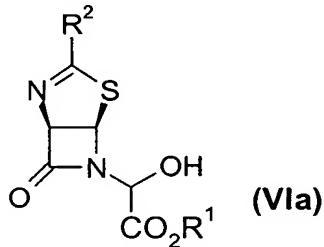
with a compound of formula (IV)



5

wherein Y is a leaving group selected from the group consisting of bromo, chloro, fluoro, iodo and tosylate; in a solvent.

11. A process according to claim 10, wherein said Y is bromo or chloro.
12. A process according to claim 10 wherein said solvent is alcohol selected from
- 10 the group consisting of methanol, ethanol and propanol; methylene chloride; acetone; dimethylformamide or mixtures thereof.
13. A process according to claim 10, further comprising the step of preparing said compound of formula (V) by reacting a compound of formula (VIa)



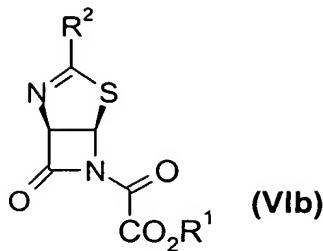
15 wherein R^1 is *para*-nitrobenzyl or allyl and wherein R^2 is selected from the group consisting of C_{1-6} alkyl, C_{6-10} aryl, C_{6-10} aryl C_{1-6} alkyl and dithianyl; with an acid in a solvent.

14. A process according to claim 13 wherein said acid is *para*-toluene sulfonic acid or methane sulfonic acid.

15. A process according to claim 13 wherein said solvent is methylene chloride, tetrahydrofuran, acetone or mixtures thereof.

20 16. A process according to claim 13 further comprising the step of preparing said compound of formula (VIa) by:

reacting a compound of formula (VIb)



wherein

R¹ is *para*-nitrobenzyl or allyl;

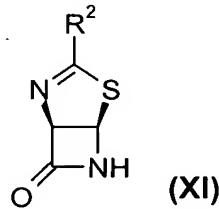
5 R² is selected from the group consisting of C₁₋₆alkyl, C₆₋₁₀aryl, C₆₋₁₀arylC₁₋₆alkyl and dithianyl;

with a reducing agent selected from the group consisting of sodium borohydride, sodium cyanoborohydride, borane and sodium triacetoxy borohydride; in a solvent.

17. A process according to claim 16 wherein said reducing agent is sodium triacetoxy borohydride.

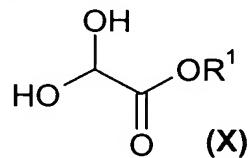
10 18. A process according to claim 16 wherein said solvent is acetic acid, methylene chloride, tetrahydrofuran, isopropanol or mixtures thereof.

19. A process according to claim 13 further comprising the step of preparing said compound of formula (VIa) by reacting a compound of formula (XI)



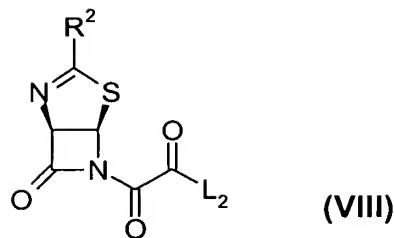
15 wherein R² is selected from the group consisting of C₁₋₆alkyl, C₆₋₁₀aryl, C₆₋₁₀arylC₁₋₆alkyl and dithianyl;

with a compound of formula (X)



wherein R¹ is *para*-nitrobenzyl or allyl; in a solvent; in the presence of a base.

20 20. A process according to claim 16 further comprising the step of preparing said compound of formula (VIb) comprising reacting a compound of formula (VIII)



wherein

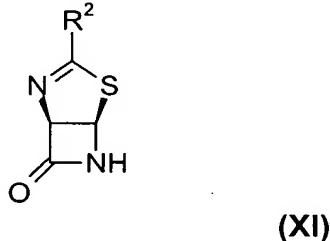
R^2 is selected from the group consisting of C_{1-6} alkyl, C_{6-10} aryl, C_{6-10} aryl C_{1-6} alkyl and dithianyl;

5 L_2 is a leaving group selected from the group consisting of halo, azide and C_{1-6} alkoxy; with a compound of formula (VII)

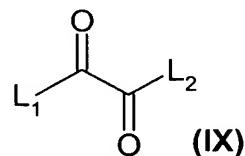


wherein R^1 is *para*-nitrobenzyl or allyl, in a solvent, in the presence of a base;

10 further comprising the step of preparing said compound of formula (VIII) by reacting a compound of formula (XI)

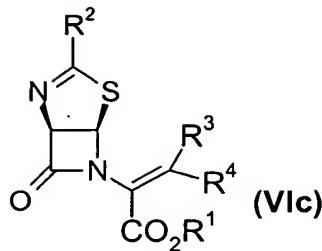


wherein R^2 is selected from the group consisting of C_{1-6} alkyl, C_{6-10} aryl, C_{6-10} aryl C_{1-6} alkyl and dithianyl; with a compound of formula (IX)



15 wherein each of said L_1 and L_2 is a leaving group selected from the group consisting of halo, azide and C_{1-6} alkoxy; in a solvent, optionally in the presence of a base.

21. A process according to claim 16 further comprising the step of preparing said compound of formula (VIb) comprising reacting a compound of formula (VIc)



wherein

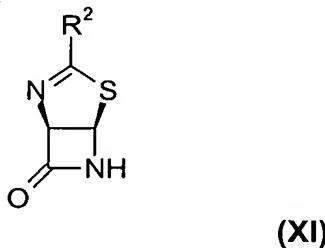
R¹ is *para*-nitrobenzyl or allyl;

5 R² is selected from the group consisting of C₁₋₆alkyl, C₆₋₁₀aryl, C₆₋₁₀arylC₁₋₆alkyl and dithianyl;

R³ is hydrogen or C₁₋₆alkyl; and

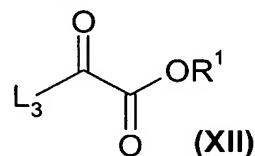
R⁴ is hydrogen or C₁₋₆alkyl; with ozone, in a solvent.

22. A process according to claim 16 further comprising the step of preparing said compound of formula (VIb) comprising reacting a compound of formula (XI)



10

wherein R² is selected from the group consisting of C₁₋₆alkyl, C₆₋₁₀aryl, C₆₋₁₀aryl C₁₋₆alkyl, and dithianyl; with a compound of formula (XII)



wherein

15 said L₃ is halo;

R¹ is *para*-nitrobenzyl or allyl;

in a solvent, in the presence of a base.

23. A process according to claim 20, wherein each of L₁ and L₂, wherever each of them occurs, is halo selected from the group consisting of bromo or chloro.

20 24. A process according to claim 21 wherein R³ is methyl and R⁴ is methyl.

25. A process according to claim 7 wherein said solvent, wherever it occurs, is methylene chloride, tetrahydrofuran or mixtures thereof.

26. A process according to claim 21 wherein said solvent is methylene chloride, tetrahydrofuran, isopropanol or mixtures thereof.

27. A process according to claim 19 wherein said base is selected from the group consisting of diisopropylamine, triethylamine, pyridine and 2,6-lutidine.

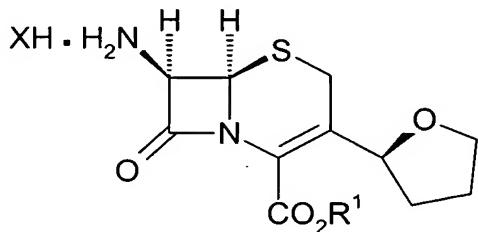
5 28. A process according to claim 1, wherein each of said R¹, wherever it occurs, is *para*-nitrobenzyl.

29. A process according to claim 1, wherein each of said R¹, wherever it occurs, is allyl.

30. A process according to claim 1, wherein each of said R², wherever it occurs, 10 is C₆₋₁₀arylC₁₋₆alkyl.

31. A process according to claim 1, wherein each of said R², wherever it occurs, is benzyl.

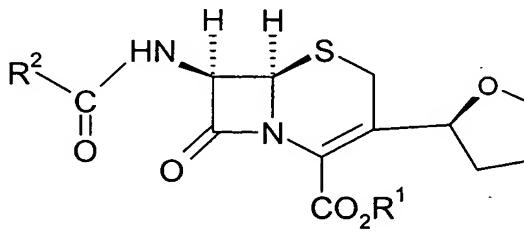
32. A compound of formula (I)



(I)

15 wherein R¹ is *para*-nitrobenzyl or allyl; and X is halo.

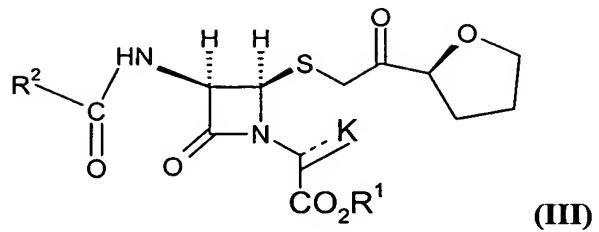
33. A compound of formula (II)



(II)

wherein R¹ is *para*-nitrobenzyl or allyl; and R² is (C_{6-C₁₀})aryl(C₁₋₆)alkyl.

34. A compound of formula (III)



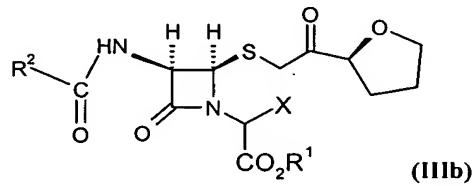
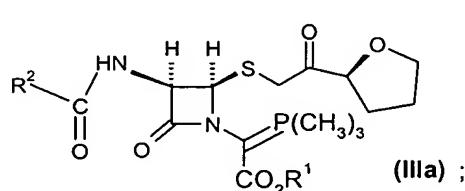
wherein R^1 is *para*-nitrobenzyl or allyl;

R^2 is (C_6 - C_{10})aryl(C_{1-6})alkyl;

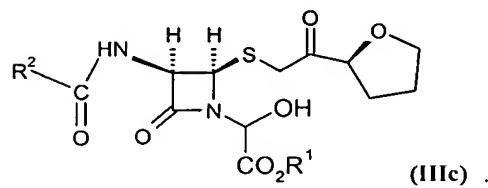
K is hydroxy, halo or $-P-(CH_3)_3$;

5 wherein the C-K bond is a single bond when K is hydroxy or halo; and a double bond when K is $-P-(CH_3)_3$; and

wherein said compound of formula (III) is selected from the group consisting of compound of formulae (IIIa), (IIIb) and (IIIc):

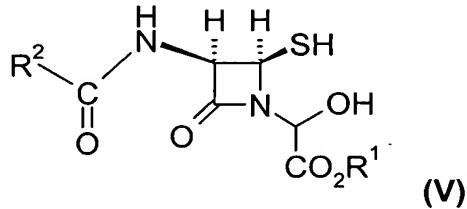


and



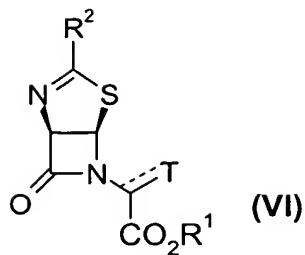
10

35. A compound of formula (V)



wherein R^1 is *para*-nitrobenzyl or allyl; and R^2 is (C_6 - C_{10})aryl(C_{1-6})alkyl.

36. A compound of formula (VI)



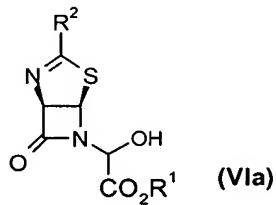
wherein R¹ is *para*-nitrobenzyl or allyl;

R² is (C₆-C₁₀)aryl(C₁₋₆)alkyl;

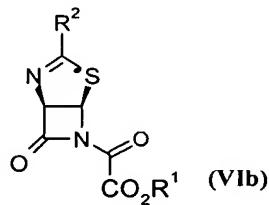
T is hydroxy or >O;

5 wherein the C-T bond is a single bond when T is hydroxy; and a double bond when T is >O ; and

wherein said compound of formula (VI) is selected from the group consisting of compound of formulae (VIa) and (VIb):



and



10 37. A compound according to claim 32, wherein said R¹ is *para*-nitrobenzyl.
38. A compound according to claim 32, wherein said R¹ is allyl.
39. A compound according to claim 32, wherein said R² is benzyl.